In The Claims

Please amend the claims as follows.

1. (Cancelled)

2. (Currently Amended) An amperage control for an electrically operated valve, comprising:

a. a process control apparatus generating a plurality of electrical operating data signals, each signal corresponding to an operating parameter of the electrically operated valve;

b. a valve control apparatus transmitting a voltage to the electrically operated valve to control the operation of the valve, the valve control apparatus receiving at least one operating data signal generated by the process control apparatus;

c. the electrically controlled valve having a current flow created therein upon receiving the voltage from the valve control apparatus;

d. a current sensing apparatus sensing the flow of current in said electrically controlled valve, said current sensing apparatus creating an electrical signal responsive to the current flow in said electrically controlled valve;

e. said signal created by the current sensing apparatus applied to said valve control apparatus, said valve control apparatus control, the operation of said electrically controlled valve responsive to said signal created by the current sensing apparatus;

a first impulse current, which is one of a number of regulated current intervals of the flow of current in said electrically controlled valve, delivered by the valve control apparatus to set the valve in motion toward an open state during a first time phase;

a first low current, which is one of the regulated current intervals of the flow of current in said electrically controlled valve, delivered by the valve control apparatus to stabilize the valve in the open state during a second time phase, the first low current having a lower amplitude than an amplitude of the first impulse current;

a substantially zero current, which is one of the regulated current intervals of the flow of current in said electrically controlled valve, delivered by the valve control apparatus for an electrically idle interval during a third time phase, to conserve energy, as well as to allow magnetic forces to dissipate prior to a following reverse condition;

a second impulse current, which is one of the regulated current intervals of the flow of current in said electrically controlled valve and which is polarized oppositely to the first impulse current, delivered by the valve control apparatus to set the valve into motion toward a closed state during a fourth time phase; and

a second low current, which is one of the regulated current intervals of the flow of current in said electrically controlled valve and which is polarized oppositely to the first low current, delivered by the valve control apparatus to stabilize the valve in the closed state during a fifth time phase, the second low current having a lower amplitude than an amplitude of the first impulse current.

3. (Cancelled)

4. (Cancelled)

5. (Cancelled)

6. (Previously Amended) The amperage control of claim 2, wherein the process control apparatus contains information that determines an open and closed sequence of the electrically controlled valve.

7. (Previously Amended) The amperage control of claim 2 wherein the valve control apparatus receives valve operating data from the process control apparatus and transforms said data into electrical signals applied to the electrically operated valve.

8. (Previously Amended) The amperage control of claim 2 wherein upon the detection of a predetermined current in the electrically controlled valve, the valve control apparatus reduces the current applied to the valve.

9. (Previously Amended) The amperage control of claim 2 wherein upon the detection of a predetermined current in the electrically controlled valve, the valve control apparatus adjusts the current applied to the electrically controlled valve responsive to said signal created by said current sensing apparatus.

10. (Previously Amended) The amperage control of claim 9 wherein the adjustment of the current applied to the electrically controlled valve maintains a constant current output in the valve.

11. (Previously Amended) The amperage control of claim 2 wherein the electrically controlled valve includes a coil, the current sensing apparatus comprises a resistor in series with the coil, and current passing through the resistor creates a voltage drop.

12. (Original) The amperage control of the claim 11 wherein the voltage drop provides a feedback signal that is transmitted to the valve control apparatus, the valve control apparatus adjusting the current delivered to the coil of the electrically controlled valve responsive to the feedback signal.

13. (Cancelled)

14. (Currently Amended) ~~The~~ A method of controlling ~~the~~ an operation of an electrically controlled valve comprising the steps of:

a. creating a plurality of first electrical signals that correspond to at least one of the operation and control instructions for the electrically controlled valve;

b. transforming said first electrical signals into a plurality of second electrical signals and transmitting said second electrical signals to the electrically controlled valve, creating an electrical current in the electrically controlled valve;

c. sensing the current level in the electrically controlled valve and providing a third electrical signal responsive to said sensed current; and

d. providing a current to the electrically controlled valve responsive to the third electrical signal, wherein the electrically controlled valve includes a coil, and step (e) comprises sensing the current level in the coil;

steps a, b, c and d thereby effecting delivery of a first impulse current to set the valve in motion toward an open state during a first time phase, delivery of a first low current to stabilize the valve in the open state during a second time phase, the first low current having a lower amplitude than an amplitude of the first impulse current, delivery of a substantially zero current for an electrically idle interval during a third time phase to conserve energy, as well as to allow magnetic forces to dissipate prior to a following reverse condition, delivery of a second impulse current, which is polarized oppositely to the first impulse current, to set the valve into motion toward a closed state during a fourth time phase, and delivery of a second low current, which is polarized oppositely to the first low current, to stabilize the valve in the closed state during a fifth time phase, the second low current having a lower amplitude than an amplitude of the first impulse current.

15. (Previously Amended) The method of claim 14 wherein the first electrical signals establish a sequence that determines when the electrically controlled valve transitions between an open and closed position.

16. (Cancelled)

17. (Cancelled)

18. (Previously Amended) The method of claim 14 wherein the step of sensing the current level comprises the steps of:

a. generating a voltage drop to create a feedback signal;

b. applying the feedback signal to change the value of the current in the electrically controlled valve.

19. (Currently Amended) An apparatus, comprising:

a valve control stage operatively coupled to a coil of a solenoid actuator of a valve;

a current sensing stage operatively coupled to the coil of the solenoid actuator of the valve and to the valve control stage, current in the coil of the valve being monitored by the current sensing stage which sends data indicative thereof to the valve control stage;

a first impulse current, a first low current, a substantially zero current, a second impulse current, and a second low current supplied by the valve control stage to the coil of the solenoid actuator of the valve;

the first impulse current delivered to set the valve in motion toward an open state during a first time phase;

the first low current delivered to stabilize the valve in the open state during a second time phase, the first low current having a lower amplitude than an amplitude of the first impulse current;

the substantially zero current delivered for an electrically idle interval during a third time phase to conserve energy, as well as to allow magnetic forces to dissipate prior to a following reverse condition;

the second impulse current, which is polarized oppositely to the first impulse current, delivered to set the valve into motion toward a closed state during a fourth time phase; and

the second low current, which is polarized oppositely to the first low current, delivered to stabilize the valve in the closed state during a fifth time phase, the second low current having a lower amplitude than an amplitude of the first impulse current.

20. (Previously Presented) The apparatus according to claim 19, wherein during the third time phase magnetic forces in the coil of the valve dissipate prior to a following reversing operation of the valve.

21. (Currently Amended) An apparatus, comprising:
a valve control stage operatively coupled to a coil of a solenoid actuator of a valve;
a current sensing stage operatively coupled to the coil of the solenoid actuator of the valve and to the valve control stage, current in the coil of the valve being monitored by the current sensing stage which sends data indicative thereof to the valve control stage;
a first impulse current, a first low current, and a substantially zero current supplied by the valve control stage to the coil of the solenoid actuator of the valve;
the first impulse current delivered to set the valve in motion toward an open state during a first time phase;
the first low current delivered to stabilize the valve in the open state during a second time phase, the first low current having a lower amplitude than an amplitude of the first impulse current; and
the substantially zero current delivered for an electrically idle interval during a third time phase, to conserve energy, as well as to allow magnetic forces to dissipate prior to a following reverse condition.

22. (Previously Presented) The apparatus according to claim 21, wherein during the third time phase magnetic forces in the coil of the valve dissipate prior to a following operation of the valve.

23. (Currently Amended) An apparatus, comprising:
a spray dampening system of a rotary printing press having at least a valve control stage, a current sensing stage, and at least one valve;
the valve control stage operatively coupled to a coil of a solenoid actuator of the valve;
the current sensing stage operatively coupled to the coil of the solenoid actuator of the valve and to the valve control stage, current in the coil of the valve being monitored by the current sensing stage which sends data indicative thereof to the valve control stage;
a first impulse current, a first low current, and a substantially zero current supplied by the valve control stage to the coil of the solenoid actuator of the valve;
the first impulse current delivered to set the valve in motion toward an open state during a first time phase;

a spray dampening system of a rotary printing press having at least a valve control stage, a current sensing stage, and at least one valve;
the valve control stage operatively coupled to a coil of a solenoid actuator of the valve;
the current sensing stage operatively coupled to the coil of the solenoid actuator of the valve and to the valve control stage, current in the coil of the valve being monitored by the current sensing stage which sends data indicative thereof to the valve control stage;
a first impulse current, a first low current, a substantially zero current, a second impulse current, and a second low current supplied by the valve control stage to the coil of the solenoid actuator of the valve;
the first impulse current delivered to set the valve in motion toward an open state during a first time phase;
the first low current delivered to stabilize the valve in the open state during a second time phase, the first low current having a lower amplitude than an amplitude of the first impulse current;
the substantially zero current delivered for an electrically idle interval during a third time phase, to conserve energy, as well as to allow magnetic forces to dissipate prior to a following reverse condition;
the second impulse current, which is polarized oppositely to the first impulse current, delivered to set the valve into motion toward a closed state during a fourth time phase; and
the second low current, which is polarized oppositely to the first low current, delivered to stabilize the valve in the closed state during a fifth time phase, the second low current having a lower amplitude than an amplitude of the first impulse current.

26. (Previously Presented) The apparatus according to claim 23, wherein during the third time phase magnetic forces in the coil of the valve dissipate prior to a following operation of the valve.

27. (Cancelled)

28. (Cancelled)

... 27 and 28 have been cancelled, and therefore the rejection of these claims is deemed moot.

The Examiner rejected claims 2, 4-12, 14 and 18-26 under 35 U.S.C. 103(a) as being anticipated by Moran (U.S. Patent 6,757,149) in view of Estelle et al (U.S. Patent 6,380,861).

MPEP §706.02(j) states:

"To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim

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